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STRYCHNINE AS AN ANTIDOTE IN NARCOTIC POISONING.

BY G. A. GIBSON, M.D., D.Sc., F.R.S.E.

Fellow of the Royal College of Physicians of Edinburgh, and Lecturer on Materia Medica and Therapeutics at Surgeons' Hall.

It is my intention in the following brief remarks to call attention to a means of treating the effects of narcotic poisons, which has not received so much notice as it deserves. This is the employment of strychnine in order to avert the paralysing action of such drugs upon the medullary centres, a use which is not referred to in any of the popular works on pharmacology or therapeutics, with the exception of the text-book of my friend Dr. Mitchell Bruce.

Strychnine has long been used as an antagonist to chloral in cases of poisoning by that drug, and the similarity in many respects between the effects of chloral and of opium, led me about three years ago to employ strychnine in order to counteract profound opium narcosis. As is everywhere recognised narcotic drugs in lethal doses cause death through paralysis of the respiratory centre, and it appears difficult to account for the fact that strychnine, the most powerful stimulant

to that centre which we possess, should not be recommended as part of the routine treatment for all narcotic poisons. Atropine at present is allowed to hold this position, but there is a stage in opium poisoning at which the use of this drug is fraught with danger, and a patient may pass away in a condition of profound areosis in which the action of atropine preponderates over that of the original poison.

In the cases of narcotic poisoning which have come under my own personal notice during the last three years, strychnine has been used hypodermically when there has been any irregularity or interruption of the breathing, which appeared to threaten a failure of the respiratory centre. The effect of the drug is immediately shown by the increased rate, more regular rhythm, and greater depth of the respirations, and even in cases where the breathing has ceased it has again commenced after the administration of the strychnine.

The most convenient form in which strychnine may be employed is undoubtedly that of the "hypodermic tabloids," introduced a few years ago by Messrs. Burroughs, Welleome, and Co., in which the alkaloid is combined with sulphuric acid as a sulphate. These tabloids, as any one may easily satisfy himself, keep perfectly, and are therefore much better than solutions in this respect. They are kept in the same case as the syringe; they can thus be laid hold of at a moment's notice, and time is accordingly saved. They have further the advantage of being quickly dissolved by trituration with a few drops of water in the small glass mortar supplied with them.

It may not be out of place to add a word on the subject of the general treatment of narcotic poisoning, inasmuch as to certain of the directions given in the ordinary books, and even in works specially dealing with the treatment of cases of poisoning, exception must be taken. The chief indications in all such cases are two in number:—First, to remove any of the poison that may be within reach; and second, to sustain the activity of the vital centres, especially that concerned in the maintenance of the respiration, until the poison which has been absorbed is eliminated.

The first indication can most perfectly be met by washing out the stomach by means of the siphon tube, which is at once more

convenient and more thorough than the stomach-pump. If neither syphon nor stomach-pump should happen to be at hand, a tablespoonful of mustard in half-a-pint of tepid water, or twenty grains of zinc sulphate in a similar quantity of water, may be administered. In suicidal cases however the exhibition of such remedies is as a rule well-nigh impossible, and for these, as well as many other cases, the hypodermic injection of one-tenth of a grain of hydrochlorate of apomorphine, which may always be kept ready in the form of tabloids, is necessary. By one or other of these methods the last trace of the drug may be removed from the stomach. If the syphon or stomach-pump has been employed, a pint of strong black coffee should be introduced before it is withdrawn, or, if neither can be used, it may be given by the rectum.

The next indication is to keep the vital centres in a state of activity, while at the same time doing nothing that can in any way cause exhaustion of any part of the system. Here we have at our command several means of rousing the centres, which may be used in turn according to circumstances. It is well as a rule to keep the patient awake by asking questions or issuing commands in a loud voice. If this is not enough the same end may be attained by tapping the forehead with the tips of the fingers, pinching the arms and legs, or pricking the skin slightly with a needle. If these are not sufficient to prevent the appearance of sleep the cold douche may be used; but in my opinion the employment of cold is as far as possible to be avoided. A far more efficient mode of rousing the patient is to be found in the application of mustard leaves to the calves, and in the use of the interrupted or induced current, as by such means powerful stimuli may be administered without the possibility of aiding the depressing effects of the poison.

One method of keeping the patient awake must emphatically be condemned, namely that of making him walk about, as is still to be found recommended in some of the text-books. This method used to be in vogue at some of the hospitals of my acquaintance, and was carried out by means of relays of policemen specially told off for the duty. The patient was marched round the waiting-room between two of them, and was followed by the resident-physician or clerk in charge of the case, whose rôle was

to flick the calves with a wet towel, if there were any signs of flagging energy on the part of the patient. This mode of preventing the patient from sinking into slumber has a great tendency to exhaust the vital powers, and has almost everywhere been rightly abandoned.

Another method commonly adopted in such cases must also be at least as strongly denounced, namely the administration of alcoholic stimulants. These aid the action of narcotics, and must be studiously avoided.

Keeping the patient in the horizontal position, the respiration is to be carefully watched, and if there should be the least sign of irregularity, or shallowness, or inequality in the breathing, one-hundredth or one-fiftieth of a grain, according to the age of the patient, of sulphate of strychnine should be administered subcutaneously, and may be repeated at intervals of an hour two or three times. If, in spite of the strychnine the respiration becomes very feeble or ceases entirely, artificial respiration must be commenced promptly. The most convenient method to employ is that of Sylvester; and it should be persisted in until, on the one hand, the respiration is carried on by natural means, or, on the other, the heart has for half-an-hour ceased to beat. If any one who reads these remarks should employ strychnine in the manner above described he will be struck by the immediate improvement in the respiration which follows its administration.

If the circulation threatens to fail in consequence of the poison affecting the motor mechanism, or of spasm of the arterioles caused by deficient oxygenation of the blood, it also will require prompt attention. The use of the strychnine is of service as a stimulant to the motor centres of the heart, and may be aided by the employment of ammonia or ether; while if artificial respiration has been thoroughly performed there should be no spasm of the arterioles; but in the event of such an occurrence recourse must be had to nitrite of amyl.

Although special reference has been made in these remarks to narcotic poisoning, it must be added in conclusion that in cases of danger from failure of the respiratory centre, caused by the general anaesthetics, the employment of strychnine is likewise of the greatest importance, a fact of which experience has con-

vinced me. One case of this kind which came under my care, in which the respiration failed after the patient had swallowed a large quantity of chloroform, was lately placed on record by my friend Dr. Crawford Dunlop. It seems to me that the hypodermic administration of strychnine is clearly indicated in all cases where the respiration fails during the use of any of the general anaesthetics.

